J. Waldburg

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The Southern Agriculturist.

(NEW SERIES.)

Vol. VI. DECEMBER, 1846. No. 12.

METHOD OF CULTIVATION AND CURE OF CUBA TOBACCO,

AS PRACTICED IN CUBA AND THE OTHER WEST INDIA ISLANDS.

Translated from the original Spanish work, by Julian Silveyra, Havana, 1845.

—

TRANSLATOR'S PREFACE.

Having, by the kindness of a friend, been enabled to obtain a copy of a very valuable work on the "*Cultivation and Cure of Cuba Tobacco*," and knowing that the work was prohibited from being sent from the Island, and learning that there was no other copy among us, I was induced, by the advice of a friend, a distinguished Tobacco Factor in New-Orleans, to lay it before the public, in the hope that it might be the means of being of some benefit to the Agricultural portion of our community, and that if the suggestions which are made, are valuable, that they might be followed. If so, I shall be repaid for my trouble in preparing these pages. There are in reality some new ideas in respect to the application of manure which may be of utility to the planter. The cultivation of Havana tobacco for cigars, is a branch of agriculture which has received the attention of planters of the South for several years past. The continued low price of our principal staple has caused many to look around to find some other object upon which to spend their labor so as to reap an adequate return. Humbugs have had their day, and the "*morus multicaulis*" is "numbered among the things that were."—Speculation has followed speculation—each one has failed—and now the truth has forced itself upon the planter, that to save himself he must cultivate that which yields the greatest profit. There is now offered to the cultivator a substitute for cotton, which, if followed, cannot fail to average much more than any thing else. The tobacco planters in the West Indies have long held a monopoly in their own hands, and we have been compelled to pay them a heavy tribute for the pleasure of smoking a good cigar.

There is no doubt, I imagine, that blessed by Providence with such a soil and climate as ours, we should be able to raise as good tobacco in Louisiana, and some of our other Southern States, as they do in Cuba, and if the flavor is not so aromatic, and the color so rich, it will at least be a very good substitute.

The new ideas originating with Sr. Don Silveyra may prove instructive and practically good. Several gentlemen of my acquaintance have for two or three years past, cultivated tobacco, and expressed themselves generally pleased with the result. There are several peculiarities in the style of the Spanish work and things, which will doubtless meet the disapproval of some.

I confess that the views of the Spanish author do not *all* suit me, but as I determined in the outset, I will not commence a criticism, but give a free translation. Try this plan, and if it is good, "hold on to it," if not, cast it away. I am convinced that this plan for sowing and planting his seedlings is good, but the time he mentions will not suit our climate—for when he is about to commence planting, our crop is nearly ripe. Again—all this mystery of preparing his field, I cannot understand, nor why he sows

and plants so late. His plans of cutting, distances, &c., will meet many opposers. I could mention many other particulars which will appear strange to some, but will present the book as it is translated.

With many apologies for thus intruding myself upon the public, but offering as my excuse my regard for the Southern planting interest.

I remain, most respectfully, your obedient searvant,

East Feliciana, August 25th, 1846. JAMES S. PEACOCKE.

ON THE CULTIVATION AND CURE OF HAVANA TOBACCO.

In the beginning of May, the labors of the tobacco grower commences, at which period I prepare the land destined to be the field, ploughing and harrowing it three or four times in all during the month; by this operation I have destroyed the sprouts of the seeds which spring up with the first rains. I then divide said land into parallelograms from north to south, fifty yards in breadth and two hundred in length, divided by spaces of four yards, sufficiently wide to allow a cart to pass, and in which I go depositing the pure manure of the horse, of which preparation I shall speak hereafter. In the middle of June, (the land being regulated to this order,) I furrow across the breadth of the parallelogram from east to west, at five fourths of a yard distant. I pass the plough through the furrow three or four times in order to widen and deepen it much as possible, to be able to facilitate the operation of finishing the furrow for the hand of man, making a ridge that I collect to the south side of the said ditch which shall be made in the said field. This operation being concluded and all the manure gathered into the spaces which foresight and diligence could collect, already the beneficent rains have soaked may times these ditches. I should follow after that placing the manure in them, distributing by rule the quantity without exceeding a fourth part of its depth, which excess would injure the powerful tone of the plant. I should add to the said manure two-thirds of the decayed earth, and should stir them together until they are perfectly mingled, then leave them until they had received two or three rains, concluding the operation by covering with the rest of the dirt, or earth, forming a ridge or dyke, whose declivities turn within the ditch, and through them the water passes to the interior or bottom, when it will effect the ultimate fermentation of the manure combined with the earth which impede the rapid marth that ought to be made in a field so precarious and delicate.

At the middle of June should be concluded the operation of opening the ditches, and in the five subsequent days the distribution of the horse manure, mixed with two thirds earth, in which state it should be left until the end of the month, to give it time to soak in the rains that fall upon it; after that, cover it in the manner referred to. The middle of July will be time to commence the formation of land destined for seed plots, which will be as extensive as the means of the proprietor will permit. The ground being well prepared, and kept entirely free from those insects which are accustomed to

infect it, will produce great gains, bringing forth abundant and choice plants of which to make the field, and a secure sale of the residue, which will always find purchasers.

The operation of making seed plots is exceedingly simple; without delay seek a particular method, that when treated will produce a good result. It suits not that the land be very rich, because the plant would be too precocious, and happening to suffer mistakes at the time of arranging them for transplanting, placing them very tender, in the belief of their being well advanced, for their great size would infalibly cause them to die, or if not, to degenerate or form a bad plant. It is better that the land should be somewhat broken, but if that could not be obtained, I would form high levels, avoiding always the low, since they are notoriously prejudicial. The plots should be formed two rods in width, and eight in length, divided by paths a yard wide for passing and re-passing. I would point holes in the patch or plot not very deep, with a pick axe or mattock, leaving the paths untouched of their natural hardness; but if very sandy and light, press them down hard to impede, without delay, the intruders which unfortunately invade sometimes the plot. I would endeavor to break the surface as little as possible, and enrich it a little, lightly with powdered dirt well sifted, which should be mingled perfectly with the plot, freeing it from all sweepings of the litter that might occupy the ground and produce insects in it, for the causes that I will explain might appear in these places. For this account it is prejudicial to form the plots with boards of palms or other things. In the beginning of August, two or three patches should be sown, with a light handful of seeds, perfectly free from dust and straw, by which the experienced workman will be able to judge of the quantity sown, endeavoring to have it sparsely sown to the end, that springing clear it may increase with freedom, free from those inconveniences which would result from two close contiguity, putrefaction arising from it being the worst that can appear. And when in this multitude there succeeds any breaking or crushing, it is the cause of engendering insects without number, whose authors are decomposition, and the odor arising from plants crushed and dying. If it happens that in sowing the seed, any should fall out of the buds and spring up, I would gather them and throw them beyond the precincts, to prevents those passing in the paths from treading upon them, producing those injuries above referred to. Every three days I should repeat this operation with the above mentioned patches, even to the conclusion of the seed patch: recommending always the greatest care in saving, the lack of plants being preferable to exposing all to inevitable destruction, when thickness produces putrefaction, which is easily occasioned by want of air to the tender stems, and the indispensable moisture which the young leaves suffer in the pressure they find, which disengages the balsamic odour of the plant, attracting from a distance butterflies and other insects that destroy. If there happens a failure of water in those days, I would water the patches every

moderate morning with a very fine sprinkling, without opening the hand, that a surge of water might be avoided, which would be noxious to the springing plant. I repeat it once and a thousand times, that nothing is so prejudicial to tobacco as the putrefaction of its own leaves, badly treated from whatever cause, and recommending so much care from the beginning, that the existence of its many enemies may be avoided. And I would carefully pull these leaves from the growing, obtaining the benefit to the plantation, that the healthful leaves are preserved while the above mentioned injuries are kept away. The plants should be irrigated early in the morning as possible, in order to imitate benificent nature in this respect, which does it all in the night in the midst of serenity, keeping the ground moist most of the time after the going down of the sun. It is extremely prejudicial to irrigate in the afternoon, on account of their having been heated by the excessive warmth of the sun, and the irrigation producing immediately a violent evaporation, causing a true boiling in the plants, nearly kills them, or if not they grow in extreme debility and never produce good plants for the field, sacrificing by this bad practice the tender victims of so many labors, and from which was expected a source of fruitfulness. After the seeds of the tobacco spring up, the foreign herbs should be weeded out, those which existed in the land as well as those which were in the manure placed on the plots; not however intefering with them unless they occupy the place of the tobacco, impoverishing the land of the fertility which ought to be employed upon the plant for which it was destined, and in this case remove them with much delicacy and gentleness, in order that the plants be not injured in avoiding more fatal consequences; neither should any of the herbs be left on the beds or paths of the plot, because their stay in any part of the precint would be prejudicial. Equally noxious is the practice of covering the seed plots to preserve them from the sun, whose beneficent heat dilates the impulse, which impels the sap to the tender leaf, giving strength to its fibres, and the elasticity which hastens its development, the scales falling which held them, the patches unfurling, expanding and shooting to the light, acquiring force, the organs strengthen themselves as the bond is broken, it begins to increase and take the true color. Its elastic stalk, solid and moveable at the same time, subministers a part of the nutrition, glue is in the ascending sap, and sporting, moving itself in the air, attracts from the atmosphere all the principles which form the descending sap, beautifying and nourishing the plant which sustains it. When the seed plot has arrived at a condition for transplanting, I would open for the first time the field, and with pick axes, very sharp, would free the ground perfectly from all herbs, clearing and removing all litter that the paths might have no filth by which to engender an infinite variety of insects which would be enemies to the new host, that is exclusively to inhabit this *mansion*. I would open with pick axes the furrows which are necessary to make the first field, leaving closed the rest until the time for using them. I would

take two-thirds dirt, mingled with manure, placing it to the north of said furrow, for use when needed. I would equalize the spot, removing it slightly, in order to separate it and make soluble the dirt which is going to receive the planting. In case of much drought, I would sprinkle these furrows that the young plant might encounter sufficient moisture, and not experience this operation after transplanting, which would need it more abundant on this occasion; yet a superabundance would be injurious. It is easy to know the importance of this operation; that removing from the plant the soil that sustains it, opening the source of vegetation which receives the new plant, it can but be compelled to give all its vigor and fertility to the host, which should receive all its benefits. The tobacco plant is a nice observer of whatever can administer to it from the soil or atmosphere, as much for the facility that the oblong configuration of the leaves gives, whose extraordinary size is evidently to collect the constituent parts from the air, which forms the descending sap that goes to nourish it, as for the manner in which its roots elaborate the nutritive parts of the soluble sap, and the nourishing elements contained in the preparation of the land, since it is well known by experience that the leaves suck and elaborate the moisture, and also that they decompose the atmospheric appropriating to themselves the fixed air, carbonic acid gas, or the essential principle of vegetation, absorbing the useful part and throwing off the useless.

The season for transplanting is when the young plant has budded four or six leaves, and contains three or four joints in the stem. It has also acquired an elasticity which resists the action of breaking that happens to those which are tender. They should then be brought into the place designed, and the shoot turned towards the earth, after which taking hold its buds, very lightly for protection, by which I would save without danger the root that can penetrate only a little on account of the shoalness of the patch I have recommended. I would proceed collecting them with uniformity in the left arm in the form of a bundle, which I would deposit in baskets kept for the purpose. I would do this early in the morning, suspending it when there is no dew, because moving them without dew would produce friction among the young leaves, thereby the epidermis of the beautiful plant becoming broken, exhaling balsamic odour and occasioning putrefaction, as much in those transplanted as those left, which attracts thousands of butterflies and other insects which exterminate the seed plot. The dew prevents or repairs the chafing and keeps them fresh the rest of the day, enabling them to be sown in vigor. They should be left in a place where the air circulates, carefully covering the root that they may not loose their juices by the delay, or laying in the sun. If there are many plants it would be convenient to scatter them along in the furrow, guarding the distances so that the planter can easily reach them. The distribution concluded, they should proceed with the operation of transplanting, at the medium distance of half a yard, (the Spanish yard

differs a little from the American,) with which in the left hand I would designate the place where the plant should be placed, keeping always from the line which forms the guard spaces of the parallelogram, with the greatest uniformity. The planter should take the plant in the left hand. bracing all the leaves in the same direction, with which should be supported the roots and trunk, and with the right hand fingers joined like a shovel, I would excavate an oblique hole in the southern limit of the hill or furrow in which I would place the plant, and with both hands press the soil upon the roots in order that they may adhere to it, endeavoring to let the top of the plant recline to the wall (hill) which will serve a temporary protection against the rays of the sun, and protect it from the wind in its tender state. If the ground has been soaked by rains, I would not press the soil down upon the roots at the time of transplanting, because it would cause a great torpor in their growth, preventing them from extracting the juices necessary to their increase, or it might be the ascending sap, through which avenues it communicates with the plant: moreover, the said inappropriate pressure occasions a true strangulation, which impedes the circulation of this vital principle, which leads to debility and death. In such a case the roots should be only lightly covered, avoiding always any vacuum between them and the soil, because in it putrefaction would be elaborated, occasioned by the want of communication in this hardness that the ground had acquired by being used in this state, forming a barrier continued and impenetrable. I would suspend the planting in such cases until the following morning, when the ground should be drained. I would commence the transplanting immediately after the plots begin to produce good plants, which will be from the middle of September at farthest, without attending to the pernicious customs springing from apathy and indolence. There are many proverbs among such labor, as "The season decides the time for sowing"—"When it begins to rain begin the year," and many other errors, which serve as pretexts to let the precious time pass away, and make not the least diligence to obtain the good that is to be. The best season is the epoch of the year, which nature defines for operations, and "heavy rains," ebb tide," fabulous declines and other stories should not be obstacles to impede the rapid march that should attend so luxuriant a cultivation. In truth, when the young plant is ready, wait not for "shower" or "ebb tide," as the least delay in transplanting would occasion great loss. The system of improved or enriched furrows frees from inconveniences being able to advance from the time the plant is ready, because in the bottom is found sufficient moisture preserved by the furrow or dyke placed there, with this intent sufficient time before; with which abundance, the transplanting can be moistened if the drought should continue; which operation I repeat is necessary to be done early in the morning, for reasons above demonstrated. When the transplantings have been concluded, the plants commenced vegetating and the first leaves appeared, is the time to brush or throw

over the first dirt, which operation is commonly called covering. If the drought continues, I would soak four or six ditches of the first field, and continuing to cover with dirt, which in the first operation was light, making it an object to aid the plant by placing it in a good direction. Every day this covering should be repeated in the same manner, until done.

In a few days, the change effected in these plants will be visibly seen, the prodigious growth they have made by the virtue of the manuring they have received, expanding more and more, from the fund of fertility in which they have been situated. This extraordinary vegetation astonishes the producer, and leaves him not a moment to rest, compelling him to dedicate himself to the assistance and education of his tender and growing plantation. After they have put out four or six leaves, I would give the second and last dirt to the covering which would be with all that had found existence out of the furrow or upon the part of the north, caring as much in this as in the first working, to not injure the trunk, stem or leaves, lest some of them should be injured, and afterwards result the injury of putrefaction and its contingent effects. Afterwards I would level and smooth the ground under the plants, leaving no hard clod or other object, against which the first lower leaves waving in the wind could injure themselves. I would sweep the *pathways* with a broom, to free them of the nests of insects, which may be destroyed with more facility. In this condition it would declare war with the laborious experimenter, who with strong motive should consecrate himself to fight with a vigorous army, that marches with a gigantic step to the end of its career. What prodigious transformations are experienced in the plant day by day!! How incessant the increase! how steady the growth! A growth so precocius cannot be exaggerated, since like to the head of the hydra, every day despoiled, the same plant to day trimmed and pruned appears the next day with the same phenomena. The broad pathways scarcely permit the step, and many times one must walk upon the side, to not break with his body the luxuriant leaves, not being able to pass a line without his head entering into one or the other, so impenetrable is the green and solid wall he himself has planted. The whole plantation forms the most enchanting plain, displaying the most pleasing illusions, and seem from a distance seems a sea, whose waves are gently undulating. Whoever has seen the fertile vales of the river Saint James in the section of Saint Monica, would form a true idea of the beauty and richness of this privileged culture, which could not fail to stimulate men the most listless and inactive.

I recommend very particularly the clearing of the streets or paths and furrows, to prevent decomposition, and protect them from worms, bugs, crickets, and other vile insects, terrible enemies of tobacco, which, having no dens, it will be easy to destroy. In the same manner I would not permit to remain upon the plants, suckers, leaves, or other vegetation which incessantly springs from or around the stem, because they deprive the true leaves of those juices which

give them size and quality. I would take the weeding and trash entirely out of the field, because the decomposition would occasion putrefaction, more injurious from the strong odour of balsam in solution that attracts many butterflies from the environs, and the consequences resulting from their multiplicity.

The tobacco having been cropped or topped at the height it should stop, the flower having appeared, three or four handfuls of dirt should be given it, and the ripening of the leaves will begin, which state will be known by their perfect formation, the pumice and crystalization of the sap, which appears in globules, sandy globules, colored different shades of yellow, according to the state of the atmosphere, the size of the spot varying to the action of heat or cold, and if one wishes to increase the color of the leaf, it should be left a longer time, until fully ripe, which will produce more quality in virtue of the fermentation the sap makes in the parenchyma or cellular texture, in which state it should be cut, since in this state it is exposed to many injuries, besides becoming spotted. Excessive dew or showers that cannot be absorbed by the leaves, brings on torpidity, which occasions fermentation and debility of the epidermis or cuticle. The sun shines upon them, and spots of iron, &c. &c., are formed upon them, which truly mar their beauty. The first leaves, being nearest the ground, ripen first, and are subjected regularly to these defects. Moreover, for their little quality, which results from want of air, continual friction, moisture and other causes, which makes them inferior and renders them unfit for any use except fillings, &c. The best manner to cut tobacco for convenient experiments, is, in hands of two or three leaves hanging from a part of the principal stalk of the plant, cutting from top to bottom with a very sharp curved knife, and near as possible the stem of the leaf, caring to not wound it, because from this avenue it would loose the necessary juices—in this state it will perfect its quality, which is done by elaborating by the fermentation of its materials. The knife made in the form of a sickle, should be taken in the left hand, and with the right hand grasping the lower part of a bunch, raising it gently to discover the stalk to see where to cut; afterwards I would place said bunch or cluster in the middle of the path, the superior part of the plant underneath—the lower part exposed to the sun for it to be withered, and that it may be collected with facility and placed in the cujis or sticks where scarcely half of the bundles would have been contained if this operation had not been done. I would endeavor to not leave much of the stalk in the bundles, for the difficulty occasioned to the leaf in drying, since the leaf, although weak, continues receiving the ascending sap, which juice greatly impedes this most interesting operation, which ought to be rapid as possible to avoid the terrible effects of fermentation, putrid fermentation which is commonly called "excoriation," communicating itself with rapidity to the whole deposit, and assumes the appearance of a pestilence, producing great loss.

Tilt galleys should be formed around tobacco houses, in which to deposit the sticks that have been cut by sections, to the end that the gathering may be performed in good order, not until after they have made the first fermentation, which the workman call ripening, and which will hasten very much the drying of the leaves in the said houses.

The empty cujis should be placed upon some wheels in the guard spaces, wheels two yards wide, and which will be able to contain eight loaded cujis, which the gatherer will fill with those first cut, since they are most withered and should not be left too long in the sun. The mode of collecting said bundles is sufficiently well known, and it is truly very advantageous to parade the bundles apart, being careful that the wind shall not make them fall into a situation encountering the shoots, leaving the principal stem out, by which mode it will take less time to dry. The measure of the cujis regularly is four and a half yards, and the quantity of bundles it will contain, more than 150 or 200. When the first fermentation is over, which is commonly in four days, at which time they are placed very near and almost pressed into the maduraderos (places for ripening,) they should be brought into the tobacco house and placed upon the sticks as separate as possible, that the free air may circulate through them, destroying the bad odour they have acquired by their violent fermentation, and that they may dry with more facility. When the abundance of the collection exacts a place for this preparation, the dryest sticks should be collected—those that without inconvenience from the moisture of its juices can be re-united when wished for, and needed to give more capacity to the late ones: this operation has moreover the advantage of concentrating the aromas of the leaves, taking some with others, according to the scarcity of the latest and the superabundance of the most imbued or loaded. The first cut having been made, which is the best, and which is known by the name of the principal or first cut, the stalks should be cut from the flower to the ground, and a general irrigation of them be made, according as the time may be, in order to revive the fertility of the land, blunted in some manner by the strong former growth. By this means, the shoots will be more readily liquidated, and will serve to make the second harvest, which is known by the name capaduras or second cut.

The two most robust should be preferred, leaving entire all above it, covering the wounds of the trunk or stalk with manuring from the fund in the ditches, a portion retained for this purpose, by which operation the shoots will increase with more energy. These shoots should be cultivated in the same manner as the first, pruning and topping when the flower appears, by which process the leaves will increase in a very remarkable manner, and will give another harvest, which, if not so valuable as the first, will nevertheless compensate liberally the labor that it has occasioned—selling quick for a class of fillings. These leaves vary very much from the first cut

by their different form, being longer and more acuminated, the fibres coming out from the principal nerve of the leaf which mechanism is more regular in the leaves of the first cut. A third cutting or harvest can be made from the same stalks again, cutting below the surface of the earth, but good production cannot be obtained for reason of the debility they have experienced, and for the revolution nature makes at the beginning of Spring, at which period the third harvest is made: it would be better to turn the stalks in again and arrange things for ploughing and harrowing the land in the same manner as it was done in May. In making the second crop or harvest, either a parallelogram or a portion of plants should be left to seed, that a reproduction of seeds may be obtained for the following harvest, of which collection and preservation I shall hereafter speak.

Two methods are known for selecting tabacco, the one being natural, the other artificial. The last is done at the moment the leaf is perfectly ripe, at whatever time, gathering during the night the number of cujis or sticks that can be benefited during the following day, placing them in the night upon the scaffolding places that have been made for ripening, that they may receive the night dew, and be softened into a state for culling, opening and selecting. In the morining they should be gathered up and placed in armfuls in a box made of twigs or slats from whence they should be taken for assorting, which should be done in a sheltered place. The natural method, is when the rains have begun, and the moisture of the atmosphere has made the leaves moist, in which state the cujis should be taken from the props or scaffolding, and the tobacco collected in armfuls to be carried to the sheltered place that should be prepared to receive it, and which should be placed upon a heap of dry leaves, to protect them from the moisture of the ground,—the chinks of said place should be gauged with twigs to prevent the entrance of the air and moisture. The armfuls should be placed to the sides, placing the points of the leaves within in order to preserve them moist. Two files of handfuls should be placed with sprouts towards the wall and exterior part of the quarter, forming a heap, that should not exceed two yards in heighth, the natural weight of which will be sufficient for the pressure that ought to be effected in the first fermentation of the dry leaf, communicating to itself the same time the aroma of the plant concentrated by drying, and which disenvolves itself in consequence of the moisture which has softened them. It is always necessary to form a place, or shed, where it can be sheltered with more nicety, and the precious fruit of so many labors be taken care of with more efficiency.

The time the tobacco should be in this state, will be needed by the proprietor to clear and put in order his fields, to supply the slats, food and provision of eatables for the time of assorting, which should be performed without interruption. These measures will save much expense. Also the field of fields should be renovated, giving to it the same labors, making the same ditches of furrows and placing

in all of them the pure horse manure, which had been collected daily during the preceding year, leaving them uncovered some days, and when well soaked, covering them in the manner above referred to.

The seeds which are destined for reproduction will be already ripened, (which will be known by the yellow color of the capsules,) despoiled of the flowers which crowned them. They should be collected, breaking the stalks with the right hand, and placing them in armfuls upon the left arm, when the volume is much, it should be placed in baskets to be carried to the tobacco house, when the bundles should be fastened for hanging on the cujis in the same manner as the tobacco was left to dry perfectly; they should then be examined and placed in barrels until the time of sowing.

Thus the workman, having finished these cares, should commence assorting, taking at night from the pile all the tobacco that can be stripped in a first working, which should be deposited in some boxes constructed at the side of the wall of the saloon, quarter or place appropriated to this business. They should be formed of withes fastened at some distance in the manner of weaving, with corresponding divisions numbering from two to four. In the morning the laborers should be placed on some low seats, placing before each one a portion of stripped leaves, which should be opened and four separations made, according to the size and quality. An individual, intelligent in this business, should examine the two most superior, and divide them with great care, into the first and second, and place them in their respective boxes. The third and fourth classes, the overseers who are intelligent individuals, and have no other office in assorting, should collect and form the bundles in the number of leaves the proprietor wishes, since they have no fixed number in market. Every night should be reported the operation of stripping, because it is more economical to do it when all are together and attending to the same thing, clearing the place of the stalks, litter, &c., which would impede the laborer during the day, and having the assorting done with the greatest possible neatness.

When the overseers of the third and fourth class have made a great many bundles, they should go depositing them in their respective boxes, with the heads turned out, in order that the soft points may not be mangled and broken, caring always to arrange them so that the air may not penetrate them. Also when the boxes first and second contain sufficient, by a prudent calculation, to make two or three tierces, they should be wet or sprinkled in the following manner: A bunch of cujis of tobacco should be formed half a yard from the ground and one in width, upon which should be placed leaves sufficient to cover it. Then a fine sponge should be taken very wet, lightly soaked in a liquid, and raising the hand, said leaves should be bedewed with some force, in order that the dew may enter the leaves. Practicing this operation upon both sides of this first bed, and afterwards placing the other, should be placed upon

the first, and should be bedewed upon the top, taking that from underneath and placing it upon the top and follow, doing this to the conclusion, covering them with a cloth in order that they may not loose the odour of the composition of bitumen. Having placed a regular quantity of dried leaves of tobacco and aromatic drugs in a barrel of river or well water, which infusion should be stirred many times the first and second day in order to press out the aroma of the drugs, after which they should be left quiet until the liquor has affected a sensible fermentation. The barrel should then be uncovered, and the liquor already pure, should be drawn off to make the irrigation and operation of betum or betumen.

The tierces are made in various ways, but the shortest and most regular, is making a box upon a square of coarsely worked timbers, upon whose sides should be placed five pillars for props, leaving the figure in a mould or box. Its size should be regulated to the size of the leaves, placing two that they may touch at their points, lengthening or contracting said mould or box for the heads, from or to the tenon that supports it, and by one spile or peg that subjects it to the place desired. In the bottom of said box should be placed three cords of Majagua bark, with which the tierce may be fastened, and upon which should be placed the two principal slats, and in the sides and subject to the pillars in stays should be placed the other two which form the tierce. The beds of handfuls should be placed with their heads turned outwards, and their points inward, distributing them proportionably to the number it has to hold, according to the quality, and in three beds only. Placed in this order, the staves or slats are doubled from the sides in form of a packet, following those heads that touch in the centre. The cords should be bound with a rational force, to the end that they may not be too closely bound, or the handfuls injured by too close pressure. After this process, the pillars should be loosened by the wedges that retained them, and they should be placed upon some hides or skins, to give them the rope which finishes the process. The tierces should be numbered according to their quality, and should be left some time to the sun to dry the moisture from the slats, being moistened in order to form the tierces: and lastly, they should be placed in the warehouse or place of deposit, upon sleepers, to keep them from the moisture of the ground, being careful to not place too many upon each other, because too great weight might cause them to loose the form, the regular form with which they ought to come from the box, perfectly well made. In the same manner they should avoid being broken, as that would injure them very much.

In the third and fourth class, the operation of bedewing differs, as in these the sheaf or bundles receive the dew although placed upon the same benches, sprinkling them for the night, keeping them piled some time, that they may soak and communicate to each other the balsamic odour of the composition of bitumen.

The tierces of these classes are made in the same manner as the first, with the difference of contracting the box to the size of the leaves.

I believe, that all will be convinced that upon my part, I have done as much as I was able to explain the most essential operations of this improved cultivation and preparation that occupies us. One or some may think strange, that I have not aided my assertions, by those celebrated names of foreign agriculturists, that have written for their country with greater success perhaps. In this country the circumstances are entirely different, but if in these pages, any one should encounter any thing that they could adopt, that in my method is found most useful to the land, our land, they can do it with the greatest frankness if they judge it indispensable.

This country of promise requires not so many and varied operations as those where the severity of the winters is almost an insurmountable obstacle to the acclimation of exotic plants, and if we see the cultivation of tobacco here followed with and so prolific care to increase its quality, let us meditate with decided firmness, to see if it would be possible to increase the excellence of ours. The plant which is produced in the most unlikely spot of this Isle, is superior in quality to that which is cultivated in other parts, and being so easily improved by the method I propose, it appears to me I repeat, unnecessary, to bring to our consideration that which is produced in Virginia, Brazil, France, on the Rhine, &c. &c.

I am certain that in any part of this Island whatever, the best results will be obtained by the practice of enriched furrows that I have recommended, when the land has suffered many labors, loading them more or less with manure, regulating the time of its opening and covering. The margins of rivers, regularly encountering a constant covering of dirt or drift, abounds with the virtue of increase, which always leaves excellent deposits of vegetable and animal manure. A thorough breaking up, and regulating of the furrows as I have recommended, is sufficient in said margins; also, making the above operations of clearing from herbs and other litter that would be prejudicial to the plant as I have demonstrated. I ought, however, to remark, that this tobacco will not be so good as that harvested from improved furrows.

It is no boasting when I aver, that the cultivation I propose is that which produces the best results. When one treats of the felicity of a country, and the prosperity of families, it would be sinful indeed to endeavor to introduce erroneous theories of practice. Agricultors and sensible men who deign to examine my work, will know that in all, good faith has guided me, so necessary in a work of so much importance as this.

Three years of continued, well regulated labors, besides a previous practice sufficiently extensive, and during which could be avoided all the defects which the cultivation of tobacco in our region involves, has discovered to me the truths I have already explained. I could cite respectable numbers, who were constant witness of my toils, are now living, and will read this essay, and I am persuaded would bear testimony to my agricultural efforts, and their good results.

The gathering of horse manure that ought to be made will appear a phantom; but if we meditate with care, if we examine with eyes desirous of encountering the truth, a few days will be sufficient to convince us of the heap of horse manure one beast is accustomed to produce. Three horses alone will be able to produce in one year, manure sufficient to enrich four parallelograms of 200 yards in length, 50 yards in breadth, which will produce, $5,436 in two cuts alone.

And it is not a difficult matter in this section, to collect enormous quantities of manure, which is lost in places that are never cultivated. The land gives, it is said even now, but the time is coming, in which having gathered to the strength of the soil and never enriching, we shall see ourselves compelled to seek from all parts fertilizing substances, and then will disappear the phantom that so much threatens and scandalizes us now. If agriculturists could have the curiosity to collect and separate the horse manure, and keep it in the deposits I have already described, they would be astonished at the amount collected in a few days, and would be compelled to calculate the enormous quantity obtained in an entire year, being more and more convinced that in this way it is not difficult to gather all demanded for the nice cultivation I have put to the consideration of my illustrious countrymen.

It appears natural that recommending the manure of the horse as the most enriching substance for land by which to obtain excellent tobacco, I ought to understand by analysis, the constituent parts which distinguish it from that of other animals, but the absolute want of proper means obliges me to omit in the place due to it in this treatise, the perfect knowledge of its qualities. But passing on I will remark, that it is known to abound in salts and fertilizing principles, showing a marked difference between it and that of other animals, those which ruminate. I intend to obtain a prolific analysis when circumstances will permit, the results of which I shall communicate through the organ of the press for the satisfaction of cultivators. In all great places, keepers of livery stables, &c. &c., should destine some land to sow tobacco, being so easy for the proprietors to dispose directly of the collection of horse manure of great stables, and that which is produced by the animals tied during the night, attending always to separate scrupulously the refuse of hay and other objects, which should be deposited in the places that I have recommended. The granery, at the end of the year, much improved, and of a prodigality that we know not to estimate, will insensibly show immense sums. Deficient of this precious manure, it is very useful to collect vegetables before hand, and laying them in the trenches with more abundance of them than of pure horse manure.

Calculation of the probable products of Tobacco cultivated by this method.

A parallelogram of 200 yards in length and fifty in breadth, will contain at the distance of four fifths of a yard, 160 ditches or furrows,

in each one of these, there can be placed 100 plants at the distance of half a yard.

Sum of plants in a parallelogram, - - - - - 16,000

Each plant will produce at the least 12 leaves, which we will divide into classes, eight to the first and second, and four to the third and fourth.

Sum of the leaves, 1st and 2d, - - - - - 128 00
" " " 3d and 4th, - - - - - 640 00

The third part of the first and second, considered positively of the first quality, and forming a handful to the hundred leaves, will produce four hundred and twenty-six, which sell equivalent to a good dollar each, - - - $426 00

The two-thirds remaining, considered of the second quality, and a hundred leaves to the handful, will render eight hundred and fifty-three, which being sold at the regular price of four good reals, will amount to four hundred and twenty-six pesos, four reals, - - - - - - - $426 50

The four leaves of the plant or inferior class, compose the sum of four hundred and twenty six handfuls, composed of a hundred and fifty leaves, and sold at the low price of two reals good, would amount to a hundred and six pesos, four reals, - - - - - - - - - $106 50

The second cut affords two hundred and fifty-six thousand leaves, holding as I have just said, that each plant, after the cutting, has left upon it two sprouts, and supposing that each one should produce no more than eight useful leaves, there would be sixteen leaves to each plant. This number of leaves would produce a thousand six hundred handfuls, which, being sold at the very low price of two reals, would amount to four hundred pesos, - - $400 00

The prime quality, - -	$426 00	
" second " - - - -	426 50	
" third and fourth quality, -	106 50	
" second cutting, &c., - -	400 00	
		——$1,359 00

Cost of production.

Three laborers are sufficient to cultivate one of these parallelograms or 16,000 plants of tobacco. According to the present custom of cultivation, one man is sufficient to attend to 10,000 plants, but in the system of cultivation I recommend, one man is necessary to 5,000 plants.

A laborer hires himself in the country for ten dollars a month, with board, which amounts to fourteen dollars. The three individuals will cost during the year 504 dollars. The rent of the parallelogram is six dollars, which added to the 504 dollars will amount to 510 dollars.

Product, - - - - -	$1,359
Cost of production, - - - -	510
	$849

Being able to plough the land suitably with one horse, and rent free, sixteen parallelograms would amount to the enormous sum of $13,584.

One house of tobacco large enough to contain two thousand cujis of tobacco would cost - - - - - - - $600

Two yoke of oxen, - - - - - - -	136
Two thousand neat cujis, at a real, - - -	250
Utensils of labor, - - - - - -	200
Incidental expenses, - - - - - -	814
	$2000

The rent necessary is two thousand—rent free and a horse, cultivating by this method at 13,584 dollars, the interest which this capital gains is at 679 dollars to 100.

JULIAN SILVEYRA.

Havana, Sept. 15th, 1845.

From the Southern [Tallahassee] Journal.

CULTIVATION OF BEAR GRASS, A SUBSTITUTE FOR HEMP.

"Washington, Sept. 21st, 1846.

Sir:—I have had the pleasure of receiving a number of the Tallahassee Floridian, where I notice you have conferred on me the honor to notice my letter, forwarded by the Hon. D. S. Yulee, by calling the attention of Gen. R. K. Call to questions propounded in that communication, in relation to the cultivation and preparation of the *bear grass plant*, which appears to be indigenous to your State; and, as I believe, susceptible of being applied to so many valuable manufacturing purposes. As an apology for my intrusion on this occasion, I am compelled to refer you to my former communication, and must leave the matter to subsequent events to demonstrate it.

At present, you will allow me to offer an incipient effort, in the form of an imperfect essay upon the cultivation of this plant, having no other data to govern me, but what information I can gather of the character of the plant, from Gen. R. K. Call's able communication. And in this feeble effort, I shall flatter myself that the information set forth may not prove abortive.

The mode best to be adopted for the cultivation and preservation of this valuable plant, is as follows:

The plant should be propagated in that season of the year when vegetation becomes the most thrifty, and taken from the seed. The land should be rich to produce a rapid growth, and it should be planted a reasonable distance apart, allowing sufficient room for the leaves to have free course to spread, with a free circulation of the atmosphere, and well cultivated. In planting from the seed, it will be found that the plants are more vigorous, and which will

contain, when prepared into hemp, more elasticity, and with the assistance of the free course of the atmosphere, produces a tenacity of fibre, than that which is produced from the old roots. The time of gathering is as follows: If my opinion is correct, this plant bears a flower, as all vegetable plants consist more or less of what is termed essential oil. And as early as the pullen of the flower makes its appearance, and begins to fall, the plant should be gathered for hemp, to avoid the essential oil from passing into the seed, which extracts it from the fibre, and leaves it harsh and brittle, and injures it for manufacturing purposes. But by preserving the essential oil in the fibre, it retains its natural tenacity and elasticity. This is the most essential point in the promotion of this important object. In effecting this point, we arrive at once to its utility, which no doubt can be carried to the greatest perfection, in the manufacturing of the finest fabrics, being an imitation of silk, as also fabrics for bagging purposes, &c.

The leaves, after being gathered, should be carefully exposed to the sun for a day or so, for the purpose of adhering the essential oil in the fibre, and creating a toughness, when this is completed. They then should be gathered from the field, and placed under a shelter for ready immersion, or rotting, as it is technically termed—which process is to relieve the plant or fibre of the glutinous or mucous, which composes the formation of the leaf.

I now come to a point, wherein I am sorry to be compelled to differ with Gen. R. K. Call's course of treatment. In relieving the glutinous portion from the fibre, by boiling the plant. This process produces evil effects. The heated water must affect the strength of the fibre, and produces a harshness and brittleness, and when manufactured, becomes useless.

I have arrived at the conclusion, that the plant should be immersed in water, at a temperature of from 45 to 60 degrees, or at such a temperature as will be produced by the effect of the state of the atmosphere. Standing water in ponds will answer. The mode of immersing it, is all follows: Place the plant in regular form in the water, and lay plank on the surface of it, and weight it down, or otherwise, build plank vats, and have the water introduced into them, allow the vats to be exposed to the heat of the sun when filled. The vats should not be more than two feet deep, the dimensions otherwise are not particular. When the plant is immersed for a certain time, say two or three days, or more, which will depend entirely upon the state of the atmosphere, there will be discovered in the surface of the plant, a glutinous matter. If this appears to be general, the conclusion is, that it has undergone its solution, or decomposition, of the vegetable matter which adheres to the fibre, and which will leave the fibre free for preparing it into hemp. The plants should immediately be taken out of the water, and hung or stood up to dry, ready for the preparation of transferring it into hemp. I am of the opinion, operating on it in a wet state injures

the fibre. One thing is certain, converting it into loose fibres in a wet state, and allowing the atmosphere to act suddenly upon it, produces a harshness, which is a great evil.

There will be objections, no doubt, to the process of cold water, from the circumstance of its slowness of action, and may produce a little more labor. But to a calculating mind, the objections will be overcome, from the fact of its superiority and valuableness of the article, beyond that produced by heated water.

The mode or machine necessary to produce the hemp, after passing through the former process, is simple. To those who have not the conveniences: a block of wood and maul which can be conveniently used in one hand. Holding the leaf on the block, and applying the maul with the other hand produce the fibre; or, to those that have the conveniences, the speediest way is to have two horizontal fluted rollers, operating in each other, similar to an ordinary sugar mill, as Gen. R. K. Call describes.

I have taken the liberty of advancing these views and ideas upon the subject, with the motive of calling the attention of the planter to experimenting. If they prove to be correct, I shall be happy. If the contrary, I may hope that salutary effects may be produced from the experiments to the development of other sources of treatment, to the attainment of the object in view. I should have remarked before, that the seed for planting should have been taken from the most thrifty plants, and which should be cultivated apart from that which is planted out for hemp as seed plants.

The great importance of this object at this present stage, may be set down by some as nugatory, not worthy of their attention. But in my opinion, I view the character as such as to elicit the interest of every citizen of your State, as also the attention of your legislative body The consumption of this article, when it becomes a staple, and its qualities become known generally, must extend to a great extent in this country, as also in foreign countries, to thousands of tons. And with the enterprise and ingenuity of our citizens —these combined being so fruitful, there can be no question but what it will be applied for manufacturing purposes, which at this time the mind is not capable of comprehending. The experience I have had in matters of this kind brings me to this conclusion.

It is calculated to diffuse wealth with a liberal hand to our industrious and enterprising citizens, and raise your infant State equal to others, and unsurpassed in agricultural wealth, when we consider, as Gen. R. K. Call states, that one acre of Bear Grass will produce five to six tons of hemp. With this enormous yield, we can safely rely to a certainty, that an acre will nett a clear gain of $300.— With this fact before us, the inference must be, that in time the agricultural interest of your State will augment beyond all present calculations. Therefore, the interest stands prominent before the planters and citizens of your State, to take hold of this subject in earnest, as early as possible, prosecute it with energy and diligence, and the reward will follow in getting the advance of other States south,

who no doubt will embark in its cultivation, when its qualities and treatment becomes fully developed. And wherever the article is procured the cheapest, there is where the capital will concentrate for manufacturing purposes.

I will conclude my remarks, by expressing the pleasure I should derive, in being one of the feeble instruments in bringing this important matter to a prosperous issue, viewing it as one of the blessings of a bountiful Providence, who has been pleased to bestow it upon our blessed country, and which carries the mind to a full conviction of his great design.

In becoming independent of all foreign productions, sustaining ourselves under our own vine and fig tree, in competency and independence, with the privileges of a free instituted government.

In conclusion, allow me the honor to be, respectfully, your most obedient servant, DAVID MYERLE.

To His Excellency, WM. D. MOSELEY.

For the Southern Agriculturist.

COTTON WORM.

Ingleside, near Washington, Miss.
October 26, 1846.

Mr. Editor:—The October number of the Agriculturist, I have just received.

It would appear that my pencil corrections of some of the many typographical errors which had crept into the original print of my articles on the *cotton worm*, had not been sufficiently plain. You print *Noctnaxylina*, for *Noctua xylina*. This name was given to the moth, I believe, by Say; though, as I before remarked, I think it incorrect; still I do not profess to have a sufficient knowledge of Entomology to rank it in its proper class. I am now corresponding with scientific men on the subject, having sent them specimens, and hope shortly to have their views.

It is of immense, *incalculable* importance, not only to the cotton grower, but *to the world*, that every effort should be made to check, *if it be possible*, the ravages of this insect, For my part, I have but little hope. What is to prevent the worm's appearance next year, and every subsequent year, in still greater numbers than we have had during this season? And what means can be used to prevent the total and universal destruction of the crop on this continent? I know of none.

Perhaps I may feel needlessly alarmed. Like my neighbors, I have been a severe sufferer. Yet I think this does not influence

me more than it ought to influence many one, in turning an anxious thought to the future. We have never before, so far as I can learn, had the insect with us in every stage so late in the year: there are eggs, larvæ, chrysalids and moths in abundance. So that let them exist through the winter, at what stage of their existence they may, there is no scarcity of them.

Permit me to suggest to my brother planters to think seriously of all this, and to be prepared for the worst, by planting abundance of everything necessary for supporting life, taking good care of their stock and turning their attention to the making of clothing materials. Should our fears be realized, and the crop again cut off—and the probabilities are *very strong indeed*, that the worm will be with us early enough next year to prevent the production *of any cotton*—it would be a bad business to have to purchase these things. And with abundance of every thing grown and made at home, we can *compel* the manufacturer to give us the true value of whatever *may be* made.

I regret to see that you speak of the possibility of being compelled to discontinue the *Agriculturist* next year, unless you are furnished with a greater amount of original communications. Without that, it is impossible to sustain any paper. Yours truly,

THOMAS AFFLECK.

Communicated for the Southern Agriculturist.

REPORT TO THE BLACK OAK AGRICULTURAL SOCIETY.

On the ashes of the cotton stalk, the composition of cotton soils, and the nature of rust in cotton, by J. LAWRENCE SMITH, M. D., *Assayer of the State of South-Carolina; Member of the Annual Association of American Geologists and Naturalists; Cor. Member of the American National Institute, of the Boston Society of Natural History, &c.*

The ashes left after the combustion of plants have, until a very late period, been considered merely as accidental ingredients, that varied in quality and quantity even in the same plant growing in the same region; this incombustible part was therefore looked upon as exerting no influence on the health and vigor of the plant.

The researches of modern chemists have proved the error of this supposition, by directing their time and labor and in applying

knowledge acquired in the laboratory, to agriculture and rural economy in general; and although among the many views promulgated by them, there is some error, the facts that have been brought to light, will always make the agriculturist the chemist's debtor, and should teach him to regard with proper respect what may in his eye appear to be hasty generalization.

The chemist has pointed out by analysis, that the ashes of plants of the same description, though growing in different climes, contains the same or similar ingredients. Thus, the pines of Norway and Italy when burnt, left earthy portions that are strikingly similar; these also being true of the oaks of the same countries, although these latter differed materially from the pines in the character of their ashes.

Let it not be understood, that the amount of the different substances present in the ashes of the same plant is so identical, as only to vary by the fraction of a grain; it is sufficient to bear in mind, that the leading ingredients are the same, and the whole character of the ashes such, as to enable us to infer that they belong to similar plants; the same is true for different parts of the same plants. Were it deemed necessary, numerous instances might be cited to prove the point in question, but any recent work on agriculture will convince the inquirer of this.

As the character of the ashes of plants is so invariable, it must occur to the minds of all, that they play an important part in the economy of plants, and without them plants could not grow; such a supposition the most rigid and careful experiments have proved to be correct. It being also shown that the source from whence the ashes comes is the soil, for plants create nothing, but only appropriate to themselves elements already existing; simply arranging them, so as to give rise to certain compounds—forming their woody portions from elements existing in the atmosphere and water, and their earthy parts from the soil, which must contain all the elements necessary, as the absence of *even one* will be the cause of a sickly and imperfect growth.

Without dwelling further on this subject, every one must see the necessity of having all of the required ingredients present in the soil or of supplying them if deficient; therefore the importance of a knowledge of what is the composition of soils upon which we wish to grow certain plants. I do not pretend to say, that with a thorough

knowledge of the *mere chemical composition of the soil*, all the planter's ends are to be answered, or that he will obtain the directions necessary for the improvement of his soils, as there are other properties of the soil besides its composition that influence the growth of the plant; as for instance its texture, which may be open or compact. If a soil contains all the substances a plant requires, and be compact and moist, when an open and dry soil alone is congenial to the plant, it will decay or arrive at imperfect maturity. It is for this reason that the chemist in analyzing soils has done so little for practical agriculture, he has allowed his views to become too narrowed and not examined sufficiently into other qualities of the soil. In fact the only way that practical benefit is to be derived, is, by careful investigation on their part, and patience on the part of farmers, (who must have, in other ways, seen undeniable benefits arising to them from the chemist's labors.) If this be attended to, in a few years incalculable will be their results to rural economy, and a method of analysis will be brought to bear upon soils that will answer all the required ends.

The subdivision of the parts of plants into earthy and combustible portions, belongs also to animals—in the higher orders of which, they appear in some degree separated from each other, the earthy parts constituting the mass of the bones. In others however, as the worm, insects, &c., they are intimately blended as in the plant. The prominent ingredients also of the earthy parts of the vegetable and animal kingdoms are the same, which is a natural result, as all animals *either directly or indirectly obtain their nourishment from plants.* These ingredients are *lime, phosphoric acid* and *potash*, the two first more especially, and they may be considered *par excellence* the earthy ingredients of the animal and vegetable kingdoms, without a sufficiency of which, neither one nor the other may expect a healthy growth. So then in studying soils these ingredients should particularly engross our attention as the subject of this report will show.

The ashes of a healthy cotton stalk six feet high and an inch in diameter at the largest part, with some leaves and empty pods, consists of—in 1000 *parts:—*

Lime,	303.
Potash,	243.
Phosphoric acid,	91.

Magnesia,	58.
Oxide of iron,	4.
Sulphuric acid,	13.
Chlorine,	8.
Carbonic acid,	270.
Sand,	5.

The half per cent. of sand arose from what was on external portions of the stalk and could not be readily dusted off. The carbonic acid arises from the combustion of the plant and does not previously exist in it. The chlorine that is but a little over a half per cent., the sulphuric acid which is but a little over one per cent., and the oxide of iron which is not one half per cent., may be considered as ingredients of but little if of any importance to the plant. Thereby reducing the really important ingredients to *phosphoric acid*, *potash*, *lime* and *magnesia;* this last, however, is always to be looked upon in plants. in the light of lime, and it can be replaced by lime entirely, without prejudice to the plant. The analysis which I have made of the cotton wool and seed (but which do not form a part of the report) as well as the analysis made by others of the same, show that in these also, *phosphoric acid*, *potash* and *lime* are the important constituents. In the analysis of your soils then, these have been particularly looked to, and with satisfactory results, except in the case of potash, which exists in such small quantities in all soils as renders it exceedingly difficult to collect and estimate; but I had hoped to overcome this difficulty if my duties did not now call me away from home. The soils sent were marked by letters, the surface and the subsoil from the same spot being designated by the same letter marked 1 and 2 respectively.

A.—*Somerton near Somerset Creek, in* 1000 *parts.*

	1	2
Sand,	760	800
Clay,	140	155
Moisture,	30	25
Vegetable matter,	70	20

The portion of 1000 grains of the soil soluble in warm muriatic acid furnished :—

	1	2
Alumina,	3.400	3.000
Oxide of iron,	2.700	2.500
Lime,	1.200	1.300

	1	2
Phosphoric acid,	2.000	2.300
Chlorine,	trace.	trace.
Potash and soda,	trace.	trace.
Magnesia,	0.300	0.200

B.—*Chapel Hill, (Frierson's,) in* 1000 *parts.*

	1	2
Sand,	800	850
Clay,	170	132
Moisture,	10	10
Vegetable matter,	20	8

The portion of 1000 grains of the soil soluble in warm muriatic acid, furnished:—

	1	2
Alumina,	1.200	1.150
Oxide of iron,	1.100	1.200
Lime,	1.000	0.600
Phosphoric acid,	0.160	0.175
Chlorine,	0.060	0.040
Potash and soda, (chiefly soda)	0.080	0.060

C.—*Chapel Hill, (Frierson's) in* 1000 *parts.*

	1	2
Sand,	680	700
Clay,	270	252
Moisture,	20	18
Organic matter,	30	30

The portion of 1000 grains of the soil soluble in warm muriatic acid, furnished:—

	1	2
Alumina,	1.300	1.320
Oxide of iron,	1.500	1.400
Lime,	0 410	0.510
Chlorine,	0.369	0.250
Potash and soda,	0.520	0.420

D.—*Ophir, in* 1000 *parts.*

	1	2
Land,	800	850
Clay,	166	122
Moisture,	12	13
Vegetable matter,		15

The portion of 1000 grains of the soil, soluble in warm muriatic acid, furnished :—

	1	2
Alumina,	1.200	2.800
Oxide of iron,	1.544	1.600
Phosphoric acid,	0.294	0.367
Chlorine,	0.120	0.573
Potash and soda, (chiefly potash,)	0.030	0.450
Lime,	1.520	3.320

E.—*Pincopolis, (pine barren) in* 1000 *parts.*

	1
Sand,	900
Clay,	62
Moisture,	8
Vegetable matter,	30

The portion of 1000 grains of the soil, soluble in warm muriatic acid, furnished :—

Alumina,	0.637
Oxide of iron,	0.368
Lime,	0.125
Chlorine,	trace.
Potash and soda,	trace.

F.—*Cedar Spring near Hepworth, in* 1000 *parts.*

	1	2
Sand,	860	905
Clay,	55	50
Moisture,	25	25
Vegetable matter,	60	20

The portion of 1000 grains of the soil, soluble in diluted muriatic acid, furnished :—

	1	2
Alumina,	2.600	2.800
Oxide of iron,	0.350	0.360
Lime,	1.200	1.400
Phosphoric acid,	0.050	0.060
Chlorine,	0.290	0.280
Potash and soda, (chiefly soda,)	0.200	0.150
Sulphuric acid,	0.560	0.574
Magnesia,	0.100	0.050

G.—*Cedar Spring, western extremity, in* 1000 *parts.*

	1
Sand,	700
Clay,	253
Moisture,	22
Vegetable matter,	25

The portion of 1000 grains soluble in warm muriatic acid, furnished:—

Alumina,	0.630
Oxide of iron,	0.900
Lime,	1.100
Phosphoric acid,	0.025
Chlorine,	0.320
Potash and soda,	0.400

H.—*Somerton, (Biggin Swamp,) in* 1000 *parts.*

	1	2
Sand,	810	870
Clay,	102	95
Moisture,	28	20
Vegetable matter,	60	15

The portion of 1000 grains soluble in warm muriatic acid, furnished:—

	1	2
Alumina,	6.200	5.500
Oxide of iron,	2.300	2.100
Lime,	0.710	0.850
Phosphoric acid,	1.150	1.210
Chlorine,	0.230	0.120
Potash and soda,	0.520	0.600
Sulphuric acid,	0.510	0.300
Magnesia,	0.250	0.100

I.—*Hog-swamp, (Negrohead,) in* 1000 *parts.*

	1
Sand,	760
Clay,	200
Moisture,	10
Vegetable,	30

The part of 1000 grains soluble in warm muriatic acid, furnished:

Alumina,	2.250
Oxide of iron,	3.000
Lime,	10.400

Phosphoric acid,	0.220
Chlorine,	0.154
Potash and soda, (chiefly soda,)	0.080

this soil effervesced when the acid was poured upon it.

J.—*Hog-swamp, (W. J. Dennis' clay land,) in* 1000 *parts.*

	1	2
Sand,	730	775
Clay,	150	140
Moisture,	40	45
Vegetable matter,	80	40

The portion of 1000 grains soluble in warm muriatic acid furnished:—

	1	2
Alumina,	5.200	4.800
Oxide of iron,	8.530	8.200
Lime,	1.600	0.850
Phosphoric acid,	0.080	0.085
Chlorine,	0.044	0.025
Potash and soda, (chiefly soda,)	0.020	0.010

K.—*Mrs. Prioleau, (Ward's,) in* 1000 *parts.*

	1	2
Sand,	760	783
Clay,	130	125
Moisture,	40	42
Vegetable matter,	70	50

The portion of 1000 grains, soluble in warm muriatic acid, furnished:—

	1	2
Alumina,	5.400	4.500
Oxide of iron,	4.500	4.020
Lime,	4.620	3.210
Phosphoric acid,	0.260	0.280

L.—*A. J. Harvey's, (Dubois,) in* 1000 *parts.*

	1	2
Sand,	825	862
Clay,	140	120
Moisture,	10	8
Vegetable matter,	25	10

The portion of 1000 grains soluble in warm muriatic acid, furnished:—

	1	2
Alumina,	2.300	1.800
Oxide of iron,	1.500	1.650
Lime,	0.450	0.620
Phosphoric acid,	0.120	0.200
Potash and soda,	trace.	trace.
Magnesia,	0.130	0.150

M.—*H. Harvey's, Fair forest Swamp, in* 1000 *parts.*

	1	2
Sand,	820	875
Clay,	100	90
Moisture,	30	20
Vegetable matter,	50	15

The portion of 1000 grains soluble in warm muriatic acid, furnished:—

	1	2
Alumina,	1.100	1.500
Oxide of iron,	0.950	0.650
Lime,	0 420	0.610
Phosphoric acid,	0.060	0.080
Potash,	trace.	trace.

N.—*Eutaw, (Jas. Gaillard,) marled land, in* 1000 *parts.*

Sand,	800
Clay,	110
Moisture,	32
Vegetable matter,	58

The portion of 1000 grains soluble in warm muriatic acid, furnished:—

Alumina,	2.400
Oxide of iron,	1.680
Lime,	3.200
Phosphoric acid,	0.200
Potash,	trace.

effervesced slightly.

O.—*Eutaw, (Jas. Gaillard,) unmarled, in* 1000 *parts.*

	1
Sand,	850
Clay,	100
Moisture,	25
Vegetable matter,	25

The portion of 1000 grains soluble in warm muriatic acid, furnished:

	1
Alumina,	1.800
Oxide of iron,	1.420
Lime,	0.550
Phosphoric acid,	0.050
Chlorine,	trace.
Soda and potash,	trace.
Sulphuric acid,	trace.

P.—*Walworth, (T. W. Porcher,) in* 1000 *parts.*

	1
Sand,	720
Clay,	180
Moisture,	40
Vegetable matter,	60

The portion of 1000 grains soluble in warm muriatic acid, furnished:

	1
Alumina,	3.200
Oxide of iron,	0.900
Lime,	0.350
Phosphoric acid,	0.075
Potash,	

R.—*Mexico, (S. Porcher,) in* 1000 *parts.*

	1
Sand,	705
Clay,	250
Moisture,	20
Vegetable matter,	25

The portion of 1000 grains soluble in warm muriatic acid, furnished:—

	1
Alumina,	3.300
Oxide of iron.	2.500
Lime,	1.260
Phosphoric acid,	0.030
Chlorine,	trace.
Potash and soda,	trace.
Sulphuric acid,	trace.

The following is a tabular view of the composition of the soils.

Soil.	*In* 1000 *parts.*				*Portion of* 1000 *parts soluble in warm muriatic acid.*								Colour of the soil.
	Sand	Clay	Moisture.	Vegetable matter.	Alumina.	Oxide of iron.	Lime	Phosphoric acid.	Chlorine.	Potash and soda.	Sulphuric acid.	Magnesia	
A 1	760	140	30	70	3.40	2.70	1.20	2.00	trace.	trace.	——	0.30	
A 2	800	155	25	20	3.00	2.50	1.30	2.30	trace.	trace.	——	0.20	
B 1	800	170	10	20	1.20	1.10	1.00	0.16	0.06	0.08	——	——	
B 2	850	132	10	8	1.15	1.20	0.60	0.17	0.04	0.06	——	——	
C 1	680	270	20	30	1.30	1.50	0.41	——	0,36	0.52	——	——	
C 2	700	252	18	30	1 32	1.40	0.51	——	0.25	0.42	——	——	
D 1	800	166	12	22	1.20	1.54	1.52	0 29	0.12	0.03	——	——	
D 2	850	122	13	15	2.80	1.60	3.32	0.36	0.57	0.45	——	——	
E	900	62	8	30	0.63	0.36	0.12	——	trace.	trace.	——	——	
F 1	860	55	25	60	2.60	0.35	1.20	0.05	0.29	0.20	0.56	0.10	
F 2	905	50	25	20	2.80	0.36	1.40	0.06	0.28	0.15	0.57	0 05	
G	700	253	22	25	0.630	0.90	1.10	0 02	0.32	0.40	——	——	
H 1	810	102	23	60	6.20	2.30	0.71	1.15	0.23	0.52	0.51	0.25	
H 2	870	95	20	15	5.50	2.10	0.85	1.21	0.12	0.60	0.30	0.10	
I	760	200	10	30	2.25	3.00	10.40	0.22	0.15	0.08	——	0.38	
J 1	730	150	40	80	5.20	8.53	1.60	0.08	0.04	0.02	——	——	
J 2	775	140	45	40	4.80	8.20	0.85	0.08	0.02	0.01	——	——	
K 1	760	130	40	70	5.40	4.50	4.62	0.26	——	——	——	——	
K 2	783	125	42	50	4.50	4.02	3.21	0.28	——	–	——	——	
L 1	825	140	10	25	2.30	1.50	0.45	0.12	——	trace.	——	0.13	
L 2	862	120	8	10	1.80	1.65	0.62	0.20	——	trace.	——	0.15	
M 1	820	100	30	50	1.10	0.950	0.42	0.06	——	trace.	——	——	
M 2	875	90	20	15	1 50	0.650	0 61	0.08	——	——	——	——	
N 1	800	110	32	53	2.40	1.680	3.20	0.20	——	trace.	——	——	
O	850	100	25	25	1.80	1.42	0.55	0.05	trace.	trace.	trace.	——	
P	720	180	40	60	3.20	0.90	0.35	0.07	——	trace.	——	——	
R	705	250	20	25	3.30	2.50	1.26	0.03	trace.	trace.	——	——	

From these analysis I should certainly conclude that *A* and *H* were the best soils, on account of the larger proportion of phosphoric acid contained in them. Of these two, I am disposed to think that *H* will be found the better, from it containing more potash, chlorine, and sulphuric acid than *A*, although it has not quite as much phosphoric acid; a little dressing of leeched ashes placed immediately around the plant, will very probably improve the growth of the cotton. The next best, according to these analysis, would appear to be *B. D. I. K. L. N.*. But *B. D.* and *K* are said to rust cotton, the cause of which I will allude to in another part of this report, at least so far as I have been able to make it out. All the others I should consider as being able to grow cotton fairly, except *E*, which would appear to be unfitted for almost any plant.

It is not the province of this report, to enter upon the various methods of improving these cotton soils, but it may not be out of place, to state one thing that occurs to my mind, bearing upon the wants of the plant, and character of the soils. It is, to let the laborer when he thins out for the last time, carry with him a bag containing a mixture of ground bones, (about as fine as river sand) mixed with an equal quantity of leeched ashes, and at the root of every stalk he leaves standing, throw a good handful immediately around it. In fact there is little doubt but that it will be found far more beneficial as a manure than cotton seed, and requiring a much less quantity.

The Ashley river marls and all such marls as contain from 4 to 10 per cent. of phosphate of lime, will answer well to put on the top of the ridges after the planting of the seed.

In a letter received from Mr. F. A. Porcher, accompanying the soils, he stated, that *F* and *G* are representations of soils not very rich, but very safe; and reference to my analysis will bear this out. I should have stated, although I have no mention made of what sort of soil *C* is found to be, that I consider it a very inferior one. If any general conclusion can be arrived at from the analysis, it is, *that cotton soils—every thing else being alike—is valuable according to the amount of phosphoric acid present.*

The last point to be considered in this report is that of *rust* in cotton, and here every thing is to be learnt. *Rust*, as a term in agriculture, is in about the same position as that of dispepsia in medicine. It is a name given to a variety of diseases which have some resemblance to each other, but are widely different as to their causes. The rust properly speaking, and which so commonly attacks wheat, is certainly a kind of parasitic plant of the class of fungi, that grows on the stalk, leaves, &c., of the wheat and other grain, under certain disadvantageous circumstances of weather and season. The seeds of this parasite are wafted by the breeze to the spot where it germinates; it takes root into the body of the stalk and interrupts the maturation of the seed. This rust is somewhat the color of iron rust, from which it derives its name; it readily detatches itself, and when burnt, leaves a little ashes. Now I am not aware that rust of this description has ever been known to infect cotton, that which attacks cotton shows no fungus growth, but under the effects of it, the plant becomes blighted, changes in color and dies.

To arrive at the true cause of the rust of cotton, the planter will have, by very close examination, to distinguish between the different kinds (if there be any difference) and mark well the influences that are operating upon the plant at the time they occur. When he goes as far as he can in this, let him call to his aid the chemist, give him the *rusted cotton stalk* and a *healthy cotton stalk of precisely the same size and growth*, as well as a portion of the soil taken up at the time the effects are noted. In acting in this way, the planter may hope to find out the causes of this blight, and they will of course point out the remedy, which if practicable, will meet all the wishes and repay

the labor of the planter. It is not a rigorous method of comparison, to examine the ashes of healthy and diseased plants, unless they are of the same stage of growth, for ashes of plants differ with their age. Wheat-straw, just before the grain begins to form, contain some of those ingredients that afterwards abandon to a great degree the straw and pass into the grain, making a decided difference between the ashes of young and matured wheat straw.

My examination into the cause of the rust is very imperfect, not having been furnished, as you must now see, with the proper data to go upon in my investigation; but what has been done shall be made known to your body. I have no doubt that the peculiarity of seasons may produce these diseases as well as animalculæ developed in the soil; but my firm belief is, that noxious substances in the soil are frequently the causes, and they are more commonly some of the preparations of iron—the *protoxide of iron* especially. This protoxide was found by me in much larger quantities in *D* and *K*, particularly in *K*, than any of the other soils, in fact some of them contained none of it.

I can pronounce with but little confidence upon any thing brought to light by the analysis of the cotton stalks, for the healthy and rusted stalks placed in my hands, differed too much in size and age, to furnish much information from the comparative composition of their ashes. But I did all that it was possible to do under the circumstances. There was decided difference in the amount of *oxide of iron* in the two ashes: in the ashes of the full grown healthy plant, it was only *one half per cent.*, while in the ashes of the one diseased, it was *two and a quarter* per cent. The phosphoric acid of the two did not differ materially, the healthy having nine, and the diseased eight per cent. The proportion of lime was different, the diseased forty, and the healthy thirty per cent. The proportion of potash in the diseased was fifteen per cent., while that of the healthy stalk was twenty-four.

The protoxide of iron alluded to above, is by exposure to the atmosphere, converted into the peroxide, a form from which no injurious effect may be expected, except when in very great excess; so I would suggest that in planting these lands, which rust cotton, as *D* and *K*, to disturb the surface as little as possible. This I know to answer in the case of certain soils that were examined for Dr. Townsend, of John's Island.

I am sorry that my unavoidable absence from America, will render it impossible to prosecute these labors, commenced under the auspices of your Society, and I regret it the more since much time has been consumed in fixing upon methods best suited for carrying on these investigations. I hope, however, that the active part taken by you in inquring into the true nature of the circumstances governing the growth of cotton, will be crowned with the success it deserves, and that the report may aid in pointing out the right course to be pursued.

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The publication of the *Southern Agriculturist* is suspended with this volume, which is the 6th of the new series, and the 19th vol. since its commencement in 1828.

TO OUR SUBSCRIBERS.

We shall continue to publish the names of those generous patrons, who pay us for the *Southern Agriculturist*, because we think they are supporting a work of public utility, and performing the part of patriots. In order to assist those at a distance who have not complied with our frequent calls, we insert a method by which we may get our dues through the Post office. An order on the Postmaster in Charleston, will be thankfully received; the following is the form:

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TO OUR CORRESPONDENTS AND READERS.

With the publication of this number, the subscriber regrets to announce the *suspension* of "*the Southern Agriculturist.*" He has endeavored to carry on the Journal for the last three years without an Editor, which it could not afford to pay at the lowest price; while at one time, he was able to pay $1000 for one; but the times have changed with *it*, now it does not number more than 240 subscribers, of which 160 are in Carolina; and 75 in Georgia and the other States south; 25 of which were supplied by an agent at Savannah. The whole income this year has not been over $500—not enough to pay for the printing.

Whenever there is a disposition shown to support the publisher in the work, he will be willing to re-commence his labors.

Those who have received our accounts, will please send their dues *(by mail)* to

A. E. MILLER.

This number contains a very valuable pamphlet on the method of cultivating and curing Tobacco in the Island of Cuba; being a translation from the original Spanish of Julian Silveyra; published in Havana in 1845, and translated by James S. Peacocke, of East Feliciana, in the State of Florida. We recommend it to those who are embarking in the Tobacco culture.

The article on ashes of the cotton stalk, the composition of cotton soils, and the nature of the rust in cotton, by J. Lawrence Smith, M. D., was prepared by him for the Black Oak Agricultural Society, before his departure for Turkey; and permission was given us to introduce it into this Journal by the Committee, who have had the same printed for the information of our planters.

We need not allude to the other articles, they will recommend themselves.

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